

Claims

1. Process for desulphating a solid mixture resulting from the breaking up of lead-acid batteries, comprising electrode slime residues containing lead compounds belonging to the group comprising oxides, oxysulphates and sulphates, through contact with a solution containing ammonium carbonate in the stoichiometric quantity sufficient for the sulphate concentrations present in the electrode slime plus an excess of between 0.01% and 10%, or alkali carbonates (sodium, potassium or ammonium) in the stoichiometric quantity necessary for the sulphate concentrations present in the electrode slime plus an excess of between 0.01% and 10% and one of the following substances which dissolve lanarkite:  
alkali (sodium, potassium) hydroxides, amines, amides, MEA, DEA, TEA, tartaric acid and tartrates, citric acid and citrates, glycolic acids, gluconates, alkali and ammonium acetates, alkali and ammonium nitrates, ammonia, EDTA and other complexing agents in a molar ratio of carbonate to solvent of between 1 and 2.75, in which the said lead compounds are suspended, characterised in that it comprises:  
subjecting the solid phase of the suspension to the fragmenting action of shear and compression forces exerted by brushing, scraping and compressing mechanical means.
2. Desulphating process according to claim 1, characterised in that the carbonate/solvent molar ratio is less than 1 and at the end of the desulphating reaction the lead in solution is caused to precipitate out with the addition of a suitable quantity of sodium carbonate, sodium bicarbonate or carbon dioxide.

3. Desulphating process according to claim 1, characterised in that the ratio by weight between water and the suspended solid phase lies between 0.6 and 5, preferably between 0.7 and 1.2.
4. Desulphating process according to claim 1, characterised in that the sodium carbonate in the said solution is in excess with respect to the stoichiometric quantity necessary for the quantity of sulphate present up to a maximum of 10 percentage points and the carbonate/solvent molar ratio may be between 1 and 2.75.
5. Desulphating process according to claim 1, characterised in that the contact time necessary for almost total conversion of the lead sulphate to lead carbonate is between 30 and 90 minutes.
6. Desulphating process according to any of the preceding claims, characterised in that it takes place at a temperature between ambient temperature and the boiling point of the solution.
7. Process according to claim 6, characterised in that it takes place at a temperature of between 60 and 100°.
8. Pyrometallurgical process for the recovery of lead from lead-acid battery electrode slime residues without the use of iron in the charge, characterised in that the said residues are first desulphated in accordance with the procedure according to claim 1 until they are substantially free of lead sulphate.